1997 MINE RESCUE RULES INTERPRETATION MEETING

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RULES GOVERNING THE 1997 NATIONAL MINE RESCUE CONTEST AND INTERPRETATIONS OF DISCOUNT CARDS

RULES

1. Each team shall be composed of a minimum of seven persons (five working team members, a briefing officer, and a patient).

gThe Contest Director may allow the replacement of a patient.

gAfter the clock is started only the five working members and the briefing officer will be permitted to do work.

gSwitching of team members including the briefing officer from one team to another is prohibited.

The briefing officer will remain at a designated location in the Fresh Air Base (FAB) when the team is working inby the FAB and:

gHe/She can perform necessary work outside that location.

gHe/She must return to designated location when work is completed.

- 2. Teams' medical **physicals**, dated **within** last **12 months**, must be presented at registration.
- 3. Teams must be provided with and/or adhere to the following:

gAt least a 2 hr. Approved Breathing Apparatus for each team member.

gSafety boots.

gMSHA approved protective hat and cap lamp.

gMetal ID tag attached to belt.

Any **approved** breathing **apparatus** may be used on the **patient**.

- 4. Apparatus must be approved under either Bureau of Mines Schedule 13 or Subpart H of Part 11, Title 30, Code of Federal Regulations.
- Teams must assure themselves before they report to the mine entrance or FAB that all apparatus are fully assembled, airtight, and ready to wear. Cylinder pressures must be within specifications of approval.
- 6. **Teams** are required to **bring** with them a sufficient supply of materials and **apparatus accessories**.

Teams shall have

7. gAn MSHA approved portable mine rescue communications system, or. gA sound powered communication system.

UWires/cable with tensile strength can be used as a manual communication system.

UTeam may use standard signals if system fails.

gWireless systems that do not jeopardize the integrity of the contest.

U Anyone using a wireless system at the 1997 National must notify Contest Co-Directors by August 1.

Wireless communication systems and radios will be prohibited in the isolation area.

- L This includes any personal pagers.
- 8. Each team must be under guard before the start of the Contest, and will not communicate with anyone except guards and Contest officials.
- 9. gAny team or member receiving information concerning a Contest problem prior to arriving at the FAB will be disqualified by the Chief Judge and Co-Directors. gAny team or member receiving unauthorized information concerning a Contest problem after arriving at the FAB may be disqualified by the Chief Judge and Co-Directors or discounted under Rule 35.

- Ventilation and building material will be provided on the field and this is the only material that may be used by the team.
 - gStoppings may be disassembled and used in other locations.
 - gStaplers are not permitted in lieu of hammers.
- 11. Teams will not be permitted to furnish or make placards.
 - A. Judging
 - 1. The Chief Judge, Assistant Chief Judges, and Team Judges will:
 - gBe trained in mine rescue rules and procedures. gNot be connected with any of the teams, companies, or vendors.
 - 2. **Two** or more persons will **judge** the **written** examination and **gas box** testing.

Three or more persons will **judge** and score the **team** during the entire **working** of the problem.

JUDGE(S) WILL:

gProceed to the fresh-air base and check the patient. o

- gRemain with the team until the clock has been stopped and the map turned in.
- 3. **g**Observe the captain and other team members to determine their knowledge of the equipment used.
- 4. gNot converse or interfere with a team. gStand clear of teams checking equipment.
- 5. **g**Be stationed at the fresh-air base when telephones or mine rescue communications systems are being used.
- 6. An MSHA judge will be Chairman of the committee for the judges, and work under the Chief Judge.
- 7. The judges will properly complete score cards, and each judge must sign the appropriate score card after the discounts have been recorded on the score card.
- 8. A discount will not be improvised to cover a suspected violation If there is no violation of the Contest Rules.

B. Written Examination of Crews

1. One **team member** or the **briefing officer** shall be **selected** at random to take the **written** examination.

After the selection this person will be immediately isolated.

THE TEST WILL:

- Consist of ten fill in the blank questions.
- Be designed for a key word to be in each blank.
- Be taken within a time frame of 15 minutes.
- Team members being examined will be rated by two or more judges, at least one of whom will be an MSHA employee.
- 3. The judges will not explain the meaning of a question but may explain a word or words in the questions.
- 4. Every effort will be taken to prevent information sharing during the test.

- Team members taking the written examination will not be permitted to take any written material or information into the testing area.
- C. Checking Apparatus and Other Procedures Before Entering the Mine or Leaving the Fresh-Air Base
 - 1. The person in charge of the fresh-air base will:

glntroduce himself/herself to the team.

gRead and present a prepared statement to the teams.

gOnly allow 5 minutes for presentation/discussion.

Teams will be allowed to position (this means unloading stretcher) their equipment and lay out lifeline across the fresh-air base prior to the introduction.

The team will be confined to the fresh-air base during the briefing.

Each team will be given a written problem and maps.

gSolid lines denote actual and accurately measured workings.

gDotted lines denote projections and may or may not be accurate.

gThe timing clock will be started by the team captain immediately after the team receives the blank map and problem.

D. Miscellaneous

- 1. **Problems** will be on a **flat layout** having no inclines or ladders unless the team has been notified to the contrary before the Contest.
- 2. To **rescue people**, teams may be required to **change** existing ventilation, energize power circuits, pump water, or support unsafe roof if it can be done safely.
- 3. **Unauthorized persons** must stay **out** of the working area. **Photographers** who wish to take pictures of the working teams must receive **permission** from the Director of the Contest.
- 4. gMaterials rather than placards will be used in the mine where possible.
 - gBodies will be designated by cards or by the use of dummies.
 - gPlacards indicating conditions shall be placed face up and the lettering shall not be less than one inch in height.
 - gAll faces will be designated by the use of placards.

Interpretations of A Cards

- 1. Incorrect answers on the written examination will be assessed 2 pts.
- Teams must examine gauges and apparatus at not more than 20 minute intervals. This must be done at a team stop. One point for each minute or fraction thereof. (Total discounts are not to exceed 5 points).

The **zero point** for the timekeeping process for apparatus checks will begin with the completion of the **last person checked** during the first apparatus examination and this will be the procedure that will be used throughout the problem. This means that all team members must be checked before the next twenty minutes have elapsed.

3. Teams must **complete** the **problem** in the **calculated time**, one point for each three minutes overtime, or fraction thereof (not to exceed 10 points).

gThe calculated time will be determined by averaging the working time of all teams participating in the Contest. gThe Captain must start the clock immediately after receiving the maps and problem. °

- gThe timekeeper's watch will be used for determining the working time if the Captain fails to start/stop the clock (discount team under Rule 24) or the clock fails to operate.
- gNo work will be permitted on the map after the clock has been stopped.
- 4. Conditions and/or objects can not be marked on the map in any area of the mine not explored by the team, each infraction 1 pt.

Conditions and/or objects that are in advance of the point that the captain has traveled shall not be recorded on the map, except for the following conditions when they extend from rib to rib:

- gUnsafe roof
- gCaved areas
- gWater over knee deep when walking
- gWater over six inches deep when crawling

L Inextinguishable fires must be mapped, the captain can advance to the fire but cannot go inby.

The **captain** will **examine** these areas as **close as practical**, and this will require them to be located on the mine map.

Objects or conditions passed by the team in the same opening or intersection shall be marked on the map.

5. Teams must locate and record accurately **(verbatim)** on the map conditions and/or objects that should have been found and were indicated to be in the mine, 2 pts for each omission.

L Verbatim means that the card info only has to be in sequence not stacked or oriented like the card.

The **team** is **not responsible** for locating and **mapping** objects and/or conditions that are initially found in the **FAB**.

THIS DISCOUNT SHALL BE ASSESSED FOR:

gObjects and/or conditions that are not mapped in an area of the mine that the team should have explored if the problem had been worked systematically and correctly.

gMapping items or conditions not found in the mine.

L Objects/conditions located in areas of elongated unsafe roof, unsafe rib, etc. and areas where unsafe roof, water over knee deep, etc. extends diagonally from rib to rib must be mapped if passed by the team. Mapping would not be required if the above listed areas were caved or water roofed. $^{\circ}$

gThe legend developed by MSHA and furnished to the teams shall be used by all teams to mark their respective mine maps.

gltems or conditions not covered by the legend will be written in by the team and the location of the item or condition indicated by the symbol "X".

gThe team may place any additional information on the mine map concerning items/conditions found in the mine if it does not adversely affect the legibility of the items/conditions required to be mapped.

gltems located on the team map must be within six feet of accuracy and the six foot allowance will be measured from the center point of the object drawn in.

If a team fails to explore the entire mine, the farthest point of advance shall be indicated on their map, except at the following locations:

- Faces
- Caved areas
- -Water over knee deep while walking
- -Water over six inches deep while crawling
- Unsafe roof across an opening
- Seals
- Stoppings
- Inextinguishable fires

Conditions and materials must be indicated on the team's map.

This does **not include statements** read by the patient or **notes given** to the team.

L Information found on notes in lunch boxes must be recorded on the mine map. The map shall reflect an X for each item, one for the lunch box and one for the note. These X's cannot be stacked one on top of the other. (Problem designers should ensure that lunch box notes are placards).

L Additional information placed on the map by the team cannot be symbols that are presently denoted in the legend, regardless of color coding used by the team in mapping.

L The six foot tolerance will not apply to pillar blocks drawn in projected areas, but docks will be assessed for improperly located items in these areas including faces denoted by placards.

L A placard indicating "person" that is located by the team in an area of elongated unsafe roof, but is never physically reached due to a lack of roof support, shall be mapped as an X with the word "person" written out.

The following **changes** need to be **noted** on the mine map to indicate the **conditions left** in the mine:

gChanges to ventilation structures (i.e. stoppings, doors, regulators, etc.)

gVictims removed from the mine

gElectrical circuits energized or deenergized

gFires extinguished

gWater pumped

gRoof supports installed

gIn the areas reentered by team:

USmoke cleared UGases removed ° L Ventilation structures such as stoppings, doors, etc. that are initially located and mapped, will remain on the map and any removal of such structure will be reflected by a notation indicating "removed".

L Any Roof support installed will be indicated by an X as defined in the legend. There will be an X for <u>each</u> support and no other notation is required or acceptable. If the type of roof support used for each X is identical, the wording may be written in once and a line drawn from each X to that word.

6. Teams must:

gproperly identify gases.

guse proper procedure when testing with gas detectors (gas boxes only).

gproperly check detector.

2 pts for each infraction, not to exceed 6 pts per box.

Each team shall test a series of boxes containing one of the following gases:

gCarbon monoxide

gMethane

gOxygen deficiency

gClear air

THE TEAM MEMBER SELECTED TO TAKE THE GAS TEST:

gShall not be the same member selected to take the written examination.

gShall test each detector for damage and functioning in the judges presence prior to testing.

gShall not be permitted to take any written material or information into the testing area. o

- gShall not take more than 2 minutes to test each box. gShall specify % and ppm in parameters decided by Chief Judge.
- L The person making the test will identify the gas and specify volume % or ppm prior to beginning the test in the next box.

Interpretations of B Card

A. Apparatus

1. Apparatus must be:

gProperly assembled.

gCovers, snaps etc. fastened.

gProvided with full practice canisters or other acceptable canisters in place.

2. Apparatus must be properly adjusted to the wearer.

ONLY applies to **shoulder straps**, **chest straps**, **and head straps** that are not properly fastened, are twisted or rolled (separate discount for each strap). At least two judges must concur.

- L Patient must have apparatus on and properly adjusted, even if on stretcher.
- 3. Teams must **follow** prescribed **procedures** for **going under oxygen** or air, and this will depend upon the type of apparatus used.
- 4. Apparatus must be maintained to prevent worn or deteriorated parts from creating a danger to the wearer.

gHoles that are in the breathing tubes and straps that break after the wearer goes under oxygen are discounts.

gStraps broken while still at the fresh-air base should not be discounted if they are replaced prior to starting work inby the fresh-air base.

5. Oxygen or air supply must be within limitations (not over charged).

gThis will apply to **oxygen** or air **supply prior** to **starting work** (not minimum at end of problem) and will be determined by the type of apparatus worn.

- 6. Captain must examine gauges and apparatus, and have his/her gauges, apparatus examined before entering the mine.
- 7. Persons, including patient, must wear a full face piece or goggles when **any** smoke is encountered.
- 8. Team members must not breath external air when inby the fresh-air base.
 - L Patient is excluded from this rule, may or may not be a team member. Rule 32 will apply if taken into irrespirable air.
- 9. If an apparatus failure occurs the Team must:
 - gFollow proper procedure, depending upon on type of apparatus team.
 - gReturn to the Fresh Air Base immediately.

A **simulated malfunction** will require the **apparatus** to be removed, **set on the ground** at the **FAB** and put back on utilizing proper procedures.

10. Patient must be;

gProperly protected o

gSecured to stretcher with 2 bandages, perpendicular to body with 1 around trunk and 1 around legs.

gCovered with completely unfolded blanket. gPlaced in a manner that will not foul proper operation of the apparatus.

gBrought to Fresh Air Base on a stretcher if unconscious.

Dropping the patient will constitute a discount (2 judges concur).

□ Blanket can be tucked after it is initially unfolded and placed on patient.
Straps/bandages can be placed over or under the blanket.

B. Auxiliary Equipment and Testing Devices

- 11. Team must **take** necessary **equipment** and gasdetecting devices **underground** to work the problem, a discount will be assessed even if team returns to FAB to pick up equipment.
- 12. The following equipment must be tested after the clock is started and before the entire team goes underground or inby the fresh-air base: o

- gStretchers (unloaded, person lying in prone position).
- gCommunication system (between team and BO). gFire extinguishers (visual).
- gGas detecting instruments (in judge's presence and left on during problem).
- L Team member can lie on stretcher prior to starting the clock for stretcher test, but stretcher cannot be lifted prior to starting the clock.
- 13. Faulty equipment must be left at the fresh-air base.
- 14. Extra apparatus must be secured to stretcher to prevent it from falling off.
- C. Communication and Signaling
 - 15. Team must **arrange** standard **lifeline pull signals** with lifeline judge after clock is started and **prior** to team **going underground** or inby FAB.
 - 16. Team must give proper (verbal or standard) signals between No. 5 team member and the BO related to the teams intentions.

gConstant communication shall be maintained with the briefing officer unless a malfunction of the telephone system occurs.

gA team will not be discounted if the communication system fails, if they change to using the standard lifeline pull signals.

glf the lifeline breaks, the team must immediately repair the lifeline or return to the fresh-air base.

glf the team is stopped and gives a signal to retreat or advance, the No. 5 team member must await return signal from the briefing officer prior to moving.

gWhen traveling and the No. 5 team member gives signal to stop, the No. 5 team member may not move more than two steps after receiving return signal from the briefing officer.

gSignals need not be initiated by the Captain.

glf an improper signal is corrected prior to team moving, the team shall not be discounted.

gAll team members must hold or be attached to the lifeline no more than seven feet apart while traveling. o

gA nonextendable tagline not more than 36 inches in length may be used from a team member to the lifeline.

17. The team must notify the briefing officer and obtain his or her permission before ventilation changes are made or power circuits energized.

gVentilation changes will be considered as starting, stopping, or redirection of the air current or changes of the constituents.

gDropping a line curtain, extinguishing a fire, or opening a valve, is not considered to be a ventilation change.

gBoreholes cannot be used for ventilation purposes.

glf existing check curtains are used to direct ventilation, the check curtain must first be converted into a temporary stopping.

glf water is being pumped, teams must wait until placards have been changed by the Contest officials before assuming the water has been lowered.

- 18. Team must take lifeline or other communication system into the mine prior to entire team going underground or inby FAB.
- 19. At least one working team member must be holding the lifeline in air clear of smoke.
 - gDoes not apply on surface or FAB, unless required by other Rules.
- 20. All team members shall have **hold** of the **lifeline** or telephone line or have it firmly attached to his/her person when in **smoke**.

gWould include checking entrances or portals inby the imaginary line of the openings. gAny part of a team member (hand, etc.) in smoke, team member is in smoke.

D. Gas and Roof Testing

21. Captain must test the roof, face, and/or ribs by the sound and vibration method, 2 pts for each test missed with a maximum of 6 points at any one location. °

gNo team member may perform work or move into any area during a team stop until the captain makes the appropriate roof examination (sound and vibration or visual) for that area and has physical presence in the area.

gDesignated areas of unsafe roof which are located in or on the imaginary line of an intersection will be made as soon as the captain discovers the placard indicating the unsafe roof.

L Team member can follow directly behind the captain and make appropriate gas test as the captain makes roof test. (Roof test does not have to be completed for whole area.)

L Roof test must be done before any other work, including date and initials.

glf it can be done safely, all roof tests shall be made from rib to rib.

gNo sound and vibration method roof and rib tests are required at the areas of overhanging brows or unsafe ribs.

gZigZag tests will be made in along areas of extended unsafe roof.

Roof and rib tests need to be made only once at following locations:

- Unsafe roof
- -Caved areas
- Prior to building a temporary stopping
- -Building frames for a line curtain
- Rebuilding a stopping that is completely destroyed
- Converting an existing check curtain to a temporary stopping
- -Faces

gAll structures built by the team, except for frames erected for a line curtain, will be considered to be temporary stoppings.

Regardless of their use or intention (i.e. ventilation, airlock, seals, etc.) they shall be treated and mapped as a temporary stopping.

- L This also includes all structures rebuilt by the team.
- L A temporary stopping is considered to be airtight, thus a regulator built or rebuilt by the team would be mapped as such and not as a temporary stopping.

gPrior to extinguishing a fire, roof and rib tests shall be made from rib to rib.

L The roof test must be made at all fires, even inextinguishable ones.

gWhen a fire is in an intersection, the tests must be made from imaginary rib line to imaginary rib line, perpendicular to the direction of team travel in the area the team member(s) work to extinguish a fire. gThe initial roof test, prior to extinguishing a fire, will suffice until the team advances (meaning that the number 5 person passes the fire) or the team retreats and returns to the fire area; at which time a roof test will be required.

gThereafter, roof tests perpendicular to the route of travel must also be made prior to each time a team member(s) travels through the area where the fire was located. The entire team traveling through the area as a unit would only require one test. (This test must be made by the captain before any team member travels past the location of the fire.) One test will suffice at each team stop after the fire is extinguished.

- L Roof test of fire area at an intersection must be perpendicular and from imaginary line to imaginary line. Even if this requires moving a diagonal ventilation structure.
- 22. Teams must make necessary gas tests where required.
 - A. If conditions permit, tests for carbon monoxide, methane, and oxygen deficiency shall be made at:

gEach team stop that is required by the problem or rules during initial exploration (delete "coma") in unexplored areas **q**All mine entrances and entrances to sections of the mine to be explored **q**Faces gWalls of overcasts or undercasts gStoppings and ventilation doors (if not completely destroyed) **g**Barricades gFires **q**Seals aSample pipes or tubes (valves to sample pipes or tubes must be open before testing if closed) gOpen boreholes gExhaust fans

- L Gas test must be made at all fires, including inextinguishable ones.
- B. **Gas tests** shall be made in **each opening** to an intersection **before** the **team advances** from that intersection.
 - gTests may be made at any location in the opening within 25 feet from the original stopping point of the captain or No. 5 team member if conditions permit.

gThe gas detecting instruments used shall be extended inby the imaginary line of the rib lines of the openings or entrances, unless conditions such as unsafe roof etc. exist from rib to rib. gTeams advancing inby an opening to a point that the No. 5 team member is at or inby the rib will be considered to have passed that opening.

C. Teams must check all entrances to the area to be explored prior to the entire team going underground or inby the fresh-air base.

gEntrances may be checked in air clear of smoke without the use of a lifeline so long as the entire team does not go underground or inby the fresh-air base.

gThe captain shall not advance more than 25 feet inby the imaginary line of the opening prior to the entire team advancing underground or inby the fresh-air base.

L Teams will be assessed two points for each required gas test that is not taken, thus if team fails to test for all gases in an opening this will be a six point dock even if one instrument is used.

D. The **constituents** of the air enclosed by separations intended or indicated to be airtight will be considered unknown and must be **determined by the Captain before** other team **members enter** such area. °

gActual constituents may be indicated by the use of placards.

L If a stopping has a hole in it a gas test is not required prior to entry.

E. When smoke is encountered, it will be considered to extend to a placard indicating the smoke is cleared or a separation intended or indicated to be (delete "reasonably") airtight.

glf carbon monoxide, methane, or oxygen deficiency is found in an opening containing a separation intended or indicated to be airtight, the gas will be considered to extend to the airtight separation unless otherwise indicated. glf carbon monoxide, methane or oxygen deficiency is encountered in other locations, it will be considered to extend to the next normal area to be tested for that gas, at which time the continuance or discontinuance of the gas will be determined by placards or by results of the tests.

- L Smoke should be stopped with an "End of Smoke" placard. Stating "Air Clear" addresses the constituents (gases) not solids such as smoke.
- F. Areas in which gas tests have been performed need **not** be **retested** when a team re-enters the area **unless ventilation** has been **changed**.

gUpon re-entry into any area where the ventilation has been changed, including subsequent ventilation changes, teams shall make examinations for carbon monoxide, methane and oxygen deficiency at the location of all placards where any of these gases were encountered on the initial exploration into the area. It will not be necessary to make such examinations while retreating through such areas with all patients under oxygen.

L When an area is required to be retested, no team member may pass the placard, which indicated the original gas or O₂ deficiency found during initial exploration, until the appropriate gas tests are made.

G. Gas testing devices used by teams shall be approved by MSHA.

23. Teams must use proper procedure when testing with gas detectors, testers, and indicators. Discount of 2 pts, but not to exceed 6 pts per instrument.

This will depend on type of instrument used.

L This dock is applied per instrument used and not the number of gases detected.

E. Miscellaneous

- 24. Captain must legibly mark date, initials, and team number on the check board at mine portal or freshair base and start timing device promptly after receiving the problem and map.
- 25. Captain must mark legibly, with chalk, the date and his/her initials at or on:

gFaces

gImpassable falls

gBarricades

gStoppings (if team built stopping it must be date and initialed after building process begins and before clock is stopped

gVentilation doors

gSeals

gWalls of overcast and undercast^o

gCheck curtains converted to stoppings gLocation of bodies and live persons gAt points where conditions prohibit further travel in that direction

L This rule runs concurrent with Rule 30. Thus, date and initials have to be at the <u>location</u> of the live person or body.

gSuch **places** only need to be **marked once**. gDate and initials are not required at ventilation controls completely destroyed.

26. Teams (team captain) must stop within 50 feet of the fresh-air base to check team members and apparatus.

gThis examination must be made at the **first stop** when **entire team** is **inby FAB** or portal even though the 50 foot limit has not been reached. gThis examination is also **required** on the affected apparatus upon initial **re-entry** inby the fresh-air base after such **apparatus** has been repaired or **changed**.

27. Team members may not advance or retreat more 25 feet from the captain or No. 5 team member's original stopping point, (also applies when attached to the lifeline).

- L The 25-foot limit is from the No.1 or No. 5 team member's stopping point, being attached to the life line has no bearing on this rule. Thus if the team is on a rope, spaced 7 feet apart, they could lose 3 feet of exploration distance from the No. 1 or No. 5 team member's stopping point. The 25-foot distance begins at the point that the No. 1 or No. 5 team member is standing when the team stops.
- 28. Captain or other team member will be considered to have endangered themselves if any of the following acts occur:
 - gA. Travel under unsafe roof, unsafe rib, or overhanging brow.
 - gB. Travel into or through water over knee deep when walking or over 6 inches when crawling. When water is encountered, the extent of the water will be denoted by placards.
 - L The area does not have to be designated as crawling height for this rule to be applied.
 - gC. Passing a fire in the same opening or intersection the team is traveling without first extinguishing the fire.
 - gD. Not immediately retreating to the fresh-air base when the manufacturer's.

warning device for the apparatus is activated. The team must immediately withdraw, except when it has made visual contact with a patient. The patient **may** be removed simultaneously with the withdrawal of the team.

L The word <u>may</u> gives the team the latitude to bring the patient out or leave them underground when visual contact is made. (No additional work such as retrieving timbers can be done to rescue the patient.)

L The activation of the warning whistle will require the team to return to the FAB and repair or change out the apparatus. If the activation of the warning whistle is a simulated event, the team may simulate repair or place the apparatus back into service as defined by Rule 9.

gE. Removing any roof support that is set, whether found or installed by the team.

gF. Ventilating an unexplored area with irrespirable air when the location of a potentially live person is unknown. For the purpose of this paragraph F, any unaccounted for miner is considered to be a potentially live person and a patient whether found dead or alive.

L Rule "F" does not apply if a placard indicating "Body" is located by the team in an area of elongated unsafe roof, but is not phsically reached due to a lack of roof support. The area is considered explored if the team passes by the elongated unsafe roof and the body is considered to be "located".

If a team explores all sides of overcasts or undercasts, all ends of ventilation tubes and the bottom of shafts, the in-between areas are considered explored.

L Having irrespirable air on both ends of an unexplored area does not relieve the team from having to explore in accordance with F.

gEach individual occurrence is a separate discount, but 3 or more members involved will be considered "entire team endangered"

TEAMS SHOULD SUPPORT UNSAFE ROOF IN THE FOLLOWING MANNER:

- If both ends of the unsafe roof have been previously tested by sound and vibration method, timbers must be set in sequence as follows:
 - a. set first timber outby unsafe roof.
 - b. set additional timbers in unsafe roof at no more than five foot intervals.
 - c. set last timber inby unsafe roof before any other work is done or team.

 members pass through the area. o

- 2. If neither end of the unsafe roof has been examined by the sound and vibration method, roof testing and timbers must be set in sequence as follows:
 - a. test roof on outby end of unsafe roof (Rule 21).
 - b. set first timber outby unsafe roof.
 - c. set additional timbers in unsafe roof at no more than five foot intervals.
 - d. set last timber inby unsafe roof.
 - e. test roof on inby end of unsafe roof before any other work is done or team members pass through the area (Rule 21).
 - L Outby/inby verbiage is interchangeable depending on the direction the unsafe roof is approached.
- 29. The captain or other team member shall not commit any of the following acts which could result in an explosion of an explosive air/gas mixture:

- gA. Changing conditions of the mine ventilation system in such a manner that an **explosive mixture** is moved **over** an **ignition source**.
 - Left the intent is for the equipment to be an ignition source such as battery/diesel this should be indicated on the placard.
- gB. Continuing exploration after conditions are found to indicate an imminent explosion is possible by the presence of an explosive mixture and evidence of fire (visual acknowledgment of a fire, smoke or carbon monoxide above 10 ppm).
 - □ When a withdraw situation exists at an intersection, the team can go to any location they have already explored at that stop, prior to exiting the mine.

UA team must continue to explore if it knows there is a continuous nonexplosive separation between the explosive mixture and the evidence of fire.

gC. Changing conditions of the mine ventilation in such a manner that an explosive mixture is moved over an unexplored area.

Ulf a team explores all sides of overcasts or undercasts, all ends of ventilation tubes and the bottom of shafts, the in-between areas are considered explored.

gD. Changing conditions of the mine ventilation in such a manner that an explosive mixture is moved over energized electrical equipment, energized electrical circuits (including all batteries except cap lamp batteries) or energized cables. Energizing electrical equipment, electrical circuits, or cables in an explosive mixture, or moving any of the above ignition sources into an explosive mixture.

UAn explosive mixture will be present when the methane is between five and fifteen percent inclusively and the oxygen is 12.1 percent or greater. Both methane and oxygen concentrations must be shown on the placards.

30. All missing persons must be located and the Captain must stop and physically examine, by touching, all missing persons/placards (live persons or body). This will be considered a team stop by the rules.

L If the Captain can not physically examine the missing person (person under elongated unsafe roof and team travels by area, but no timbers to enter) a stop will not be required.

- 31. Live person/s must be brought to the fresh-air base.
- 32. Potentially live person or persons must be properly protected.

gProper protection must be used on persons taken into or found in irrespirable atmospheres.

gAtmospheres containing less than 19.5 percent oxygen, concentrations of carbon monoxide in excess of 50 PPM or smoke are irrespirable atmospheres.

gln an irrespirable atmosphere, unconscious patients must be protected by approved apparatus with full face pieces. °

- gOn a conscious person, if conditions permit, an approved self-rescuer may be used.
- gTraining models may be used if sterilized and properly assembled. Simulation of proper donning of approved respiratory apparatus shall not be permitted.
- glf an **irrespirable** atmosphere is encountered immediately **outby** a **barricade**, the team must remove the irrespirable atmosphere before breaching the barricade.
- gThe atmosphere for the briefing officer shall remain respirable and this cannot be achieved by the use of an apparatus.
- L Apparatus must be placed on patient prior to being moved or being placed on stretcher, unless procedure would endanger a team member (e.g. unsafe roof).
- L Briefing officer cannot be relocated at the fresh air base to allow irrespirable air to flow across his/her designated location, he/she may only leave location to perform work.
- 33. If the problem specified "crawling height" or the team finds a placard specifying "crawling height" all team members must ensure that no body weight is supported by a foot or feet.

- 34. Working **teams running** shall be discounted if they travel at more than a walking speed (a majority of judges must concur on this).
- Team member/s shall not talk to or receive 35. information from an unauthorized person without permission of the judges or supervisors.

gUnauthorized information given to the team by the patient is prohibited.

alf this discount is assessed explain and name unauthorized person on discount card and state information given if known.

36. Proper procedure must be followed when putting apparatus on patient,

UMask tightness test is not required for an unconscious patient.

37. Patient/s designated as unconscious can not lend any assistance by:

USitting up unassisted.

UMoving arms so as to help in putting on apparatus.

UCommunicating with team.

38. Teams must not leave a patient unattended.°

- gA team member must be within **10 feet** of the patient to be considered attended.
- 39. Teams must remove patient or patients promptly to the fresh-air base
 - gA. Visual contact will require the captain's presence in the area. Verbal contact is any voice communication from the victim or victims that can reasonably be expected to be heard by the team.
 - gB. When **visual contact** is made, and conditions permit removal, **exploring** ahead of the location will be **limited** to **25 feet** in any direction. The 25 foot limit will be determined from the stopping point at or outby the patient(s).

U Delay will not be considered if necessary steps to ready the patient(s) for removal are being continued. Any of the normal functions of the team may be performed on the team stop if they do not delay removal of the patient.

gC. If the **team** is in verbal or visual contact with a patient, and the team is **unable** to immediately **reach** the **patient** due to the conditions of the mine,^o

the team may **continue to explore** (would include all of the functions normally performed on a team stop) if necessary for its own or the patient's safety. However, every effort shall be made to safely and promptly remove the patient from the mine.

Ulf multiple patients have been found at different locations and additional work is required before the patients can be removed, the sequence of removal will be at the team's discretion.

40. Teams must erect a temporary stopping (airlock) at the following locations when conditions on the other side are unknown:

Before breaching

U Stoppings

U Doors

U Seals

U Barricades

UOr removing water roofed

gThis does not apply to existing check or drop curtains used to direct the air current. When retreating out of a barricade or coming back through a stopping where an airlock has been erected, it will not be necessary to airlock on the way out if this will not change any existing ventilation. °

L A regulator closed will be considered a stopping.

gConditions will be considered **known** only in the **two** following **instances**:

- If a person behind the barricade, stopping, etc.
 relays information to the team sufficient to
 insure that the team has knowledge of the
 conditions in the area to be entered.
- 2. The captain's physical presence (entire body) has been in the area to be entered.

gA person behind a barricade, stopping, etc. may relay information by reading aloud a statement furnished by the judges. No other information on conditions behind the barricade is permitted to be relayed to the team. (Rule 35) gAn airlock permits the breaching of a ventilation control without interrupting ventilation.

L This rule is site specific (only requires an airlock at location of entry) and is not intended to require the team to build at all potential areas where an air exchange "could" occur depending on the particularities of the problem. This rule does require the building of an airlock even when both sides of water roofed have been examined, °

due to the captain's physical presence not being in the area. The team may build on either side of the water roofed in this situation, but they are responsible for changes that may occur in the working of the problem.

41. Temporary stoppings must be erected reasonably airtight.

gCurtains used to erect temporary stoppings shall be fastened at the top and sides, and at the bottom when a bottom board is provided. Top and bottom boards shall not be nailed to the uprights by the teams when stoppings are erected.

glf a structure is moved from one location to another, it must be completely dismantled prior to moving (includes curtains installed on frames).

L Teepee's to isolate equipment will not be accepted in the 1997 contest. This will prevent problems associated with mapping, legend discrepancies and perceived orientation of the equipment.

42. Teams must explore or examine workings systematically and thoroughly.

DEFINITIONS

INACCESSIBLE - Team travel is blocked by:

U Seals
U Unsafe roof rib to rib
U Inextinguishable fireso

UWater over knee deep when walking
UWater over 6 inches deep when crawling
Ucaved areas
UImpassable falls

OPENING - Any entry or mining that was performed off an entry, room, or crosscut that may or may not connect to another entry, room, or crosscut.

CROSSCUT - An opening that connects two entries.

CONTAMINANT - Any one or more of the following: smoke; carbon monoxide above 10 PPM; methane above one percent; or less than 19.5 percent oxygen.

gA. Teams must explore all areas of mine that can be explored without endangering team if problem requires entire mine to be explored.

UTeams must not leave accessible areas unexplored outby where they are working.

UTeams must not pass accessible openings.

gB. Unless blocked, teams must advance in contaminated entry or in entries adjacent to the contaminated entry.

Ulf the contaminated entry and adjacent entries are blocked, teams may explore/advance in other nearest accessible entries.

U However, the team must return to the contaminated or adjacent entry at the first accessible opening, and if not blocked, make all further explorations in the contaminated or adjacent entries before advancing into other areas of the mine.

gC. Passing or failing to explore an accessible opening to a crosscut. Team will be required to travel into accessible openings to crosscuts and tie across and behind before advancing into other areas of the mine.

Ulf a contaminant is found in an accessible crosscut, teams will be required to tie across in this crosscut before traveling into other accessible crosscuts.

- gD. Where crosscuts are blocked, the No. 5 team member may not advance beyond the inby corner of the second crosscut before the **team ties across** and/or behind into all accessible areas outby that crosscut.
 - L This rule requires team to make all accessible areas outby the 2nd x-cut limit, this would include all sides of areas that are inaccessible such as caved, etc.

UWhere crosscuts are staggered, the second crosscut will be determined by two crosscuts on the same side, either left or right, in the entry being traveled.

UAfter the accessible areas outby are completely explored to the side where the two crosscuts were determined, the team will be permitted to explore the original entry until it encounters the second crosscut to the other side.

UExploration of accessible areas may require building an airlock or ventilation controls such as a stopping, door, etc., or returning to the fresh-air base, and exploring into other entries at the discretion of the team and according to the conditions of the mine. gE. Inaccessible areas need not be explored unless the team has explored all accessible areas and there are unaccounted for miners or an explosive mixture to be moved through the inaccessible (unexplored) areas.

UTeams will be required to pump water or set timbers to explore the inaccessible areas in these cases, if the necessary materials are provided in the problem.

- gF. Exploration behind seals is not necessary, unless required by the problem and then only after all accessible areas of the mine are explored.
- 43. Five team members must complete the problem.
- 44. Teams must follow written instructions provided to the them for working of the Contest problem.
 - gProblem designers should not use this rule to contradict other established rules.
- 45. Teams must examine lunch pails.°

gAny team member may examine the lunch pail provided he/she does not exceed the 25 foot limit of the captain or No. 5 team member at a team stop.

gLunch pails under unsafe roof need not be examined unless teams enter the area.

46. Teams must make proper apparatus examinations during any required apparatus check, 1 pt for each infraction (Maximum 5 Points).

gEach team captain will examine gauges and apparatus of team members and have his gauge and apparatus examined by a team member. gA proper apparatus examination will include:

Visual examination of the

Ugauge (must be put back into protective holder after viewing)

Uface piece

Uhoses

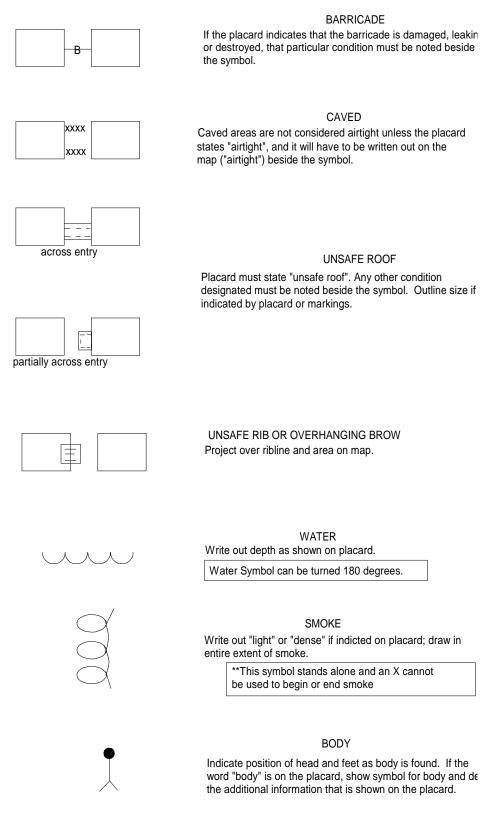
U Determine by sight or feel, that the protective cover is secure

gThe team member making the check must obtain assurance from the person being checked that the person is all right. A verbal response from the person that he/she is all right will suffice.

- 47. A team member must not commit an act that violates the intent of the problem design layout such as:
 - gTraveling into or passing materials through areas indicated to be impassible.
- 48. Teams will comply with other written adopted National Rules not covered in Discount Sheets.

MINE MAP LEGEND

	PERMANENT STOPPING Stopping intact, airtight (No indication of opening(s) or leakage).
	PERMANENT STOPPING NOT INTACT, NOT AIRTIGHT Condition noted on placard must be shown on the map.
	TEMPORARY STOPPING Stopping intact and airtight, this symbol must be used for all newly erected, intact and airtight, structures built, rebuilt or repaired by the team.
	TEMPORARY STOPPING NOT INTACT, NOT AIRTIGHT
	Condition noted on placard must be shown on the map.
	SEAL
	If the seal is equipped with devices such as sampling tubes or water traps, or is damaged, leaking, or destroyed, that particular device or condition must be noted beside the symbol.
D	DOOR
D	Can be shown by itself or in permanent or temporary stopping: however, the type and size (if indicated by placard) and "open" or "closed" must be written out.
	CHECK CURTAIN
С	Condition noted on placard must be shown on the mine map.
	LINE CURTAIN The full extent of the line curtain shall be shown. If the
·	line curtain is partially or completely down, it must be noted
	beside the symbol.
	**This symbol shall be used at any location in the mine where a line curtain is found.





LIVE PERSON

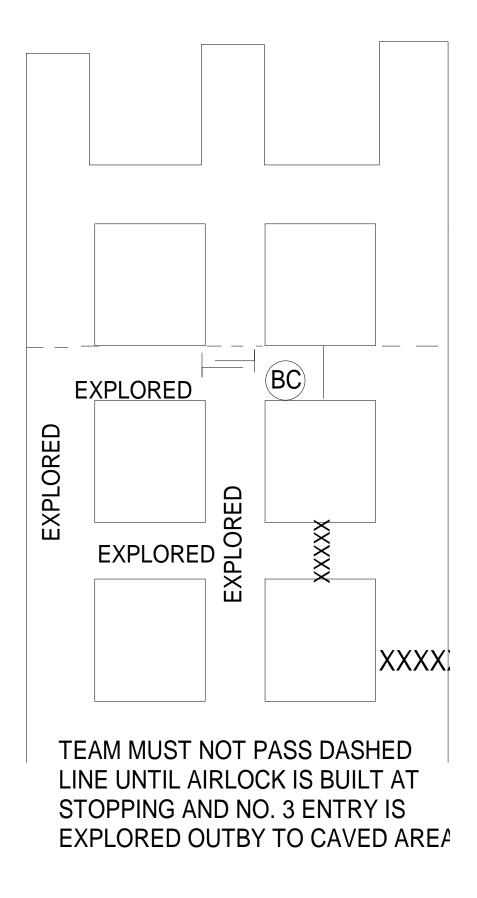
Write out condition indicated on the placard, such as consc unconscious, walking, etc., indicate position if lying down.

BRATTICE FRAMES BRATTICE CLOTH/CURTAIN MATERIAL **If the cloth is folded and lying down use this symbol PLACARD INDICATING GAS MIXTURE Write out gas name or symbol and state percent or PPM if shown on the placard. AIR MOVEMENT Write out quantity if shown on placard **FIRE** Write out "smoldering", "raging", etc., if shown on placard. **Use this symbol with another appropriate symbol or an X to indicate the object that is on fire. The fire symbol must be placed over the object on fire. **FPA** FARTHEST POINT OF ADVANCE IN ENTRY, ROOM, OR CROSSCUT FPA This symbol should only be used where areas inby the farthest point of advance will not be explored. partial face cut into old works FAN Write out conditions of fan as indicated by placard OVERCAST OR UNDERCAST If the overcast or undercast is damaged, leaking, or destroyed that particular condition must be noted beside the symbol REGULATOR If the regulator is damaged, leaking or destroyed, that particular condition must be noted beside the symbol. **The letter "R" can overlap the parallel lines LOCATION OF ANY OTHER OBJECTS, CONDITIONS, OR EQUIPMENT

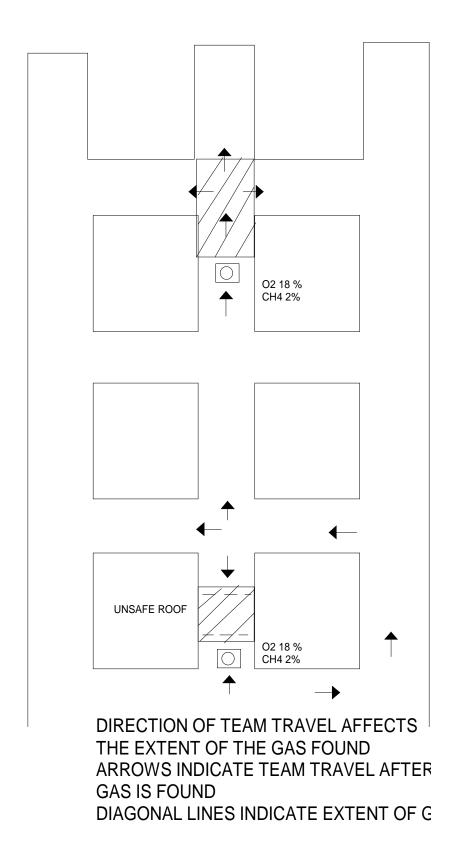
NOTE: Two maps will be provided to each team. The scale on the the maps will be 1 inch is equal to 10 feet.

Write the name of the object, condition or equipment by the symbol. This also includes faces if indicated by a placard.

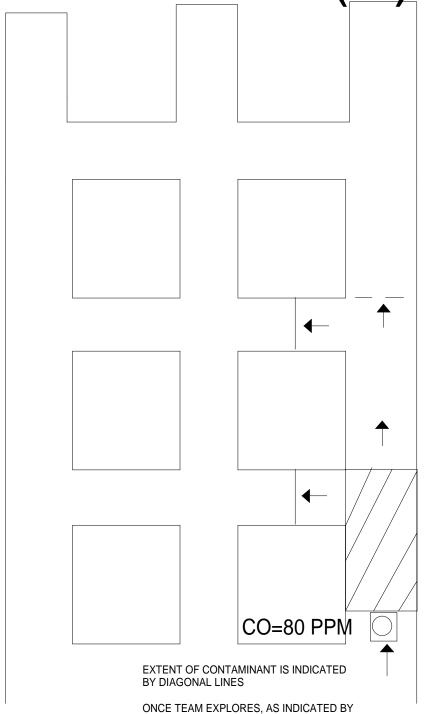
2 CROSS CUT RULE



EXTENT OF GAS



RULE 42 (B)



ONCE TEAM EXPLORES, AS INDICATED BY ARROWS, THEY HAVE DETERMINED THE EXTENT OF THE CO AND ARE NO LONGER TIED TO THE NO. 3 OR ADJACENT ENTRY AS DEFINED IN 42 (B). THUS THEY CAN ENTER NO. 1 OR NO. 2 ENTRY WHEN THEY RETURN TO THE FAB.